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Market Development

EPA CHP Partners Meeting, April 29-30th, 2003

Climate Protection Partnerships Division
Energy Supply and Industry Branch

Overview

- Overall CHP Partnership Market Development Goals and Plans
- Market Assessments
  - methodology
  - markets selected
  - marketing plans and time frames
- Opportunity for Partner Input and Engagement

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Two Market Development Approaches

- Targeted marketing
  - Assess markets that could benefit from CHP and produce significant climate benefits
  - Develop marketing plans
  - Engage allies and partners
  - Leverage resources, knowledge, expertise
  - Deploy marketing teams
  - Pursue projects
  - Follow through, evaluate, adjust
- Continued direct project support for Partners

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Current Market Development Plan

- Focus on Industrial/Institutional Sectors in regions with strong CHP Initiatives
  - Norheast and Midwest in FY 2003
  - Expand to other regions in 2004
- Focus nationally on specific sectors leveraging previous work
  - District Energy
  - Universities
  - Colleges

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Team Effort

- Two Support Contracting Teams
  - ERG, Inc.
  - D&R International
- Northeast and Midwest Regional CHP Initiatives and States
- Department of Energy
- Partners (some already engaged)

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Selection of Target Market Sectors for Northeast and Midwest

- Identify market segments that could benefit from CHP and produce significant environmental impact
- Screen by energy characteristics and economic parameters
- Consider industrial markets and certain commercial/institutional markets

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Energy Assessment: Identify market segments that could effectively apply CHP

- Technical fit for CHP
  - Significant and coincident electric and thermal loads
  - Electric to thermal ratios that match CHP technologies (0.2 to 1.2)
- Current experience with CHP
  - Number of facilities, installed MWs
  - Types and sizes of CHP systems
- Potential for additional CHP
  - Number of facilities or MW estimates

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Economic Assessment: Screen for economic health and potential value of CHP

- Growth in value of shipments
- Growth in capital expenditures
- Industry profitability or margin
- Electricity and total energy expenditures as a percent of the total cost of materials
- Presence of industry segment in Midwest and Northeast

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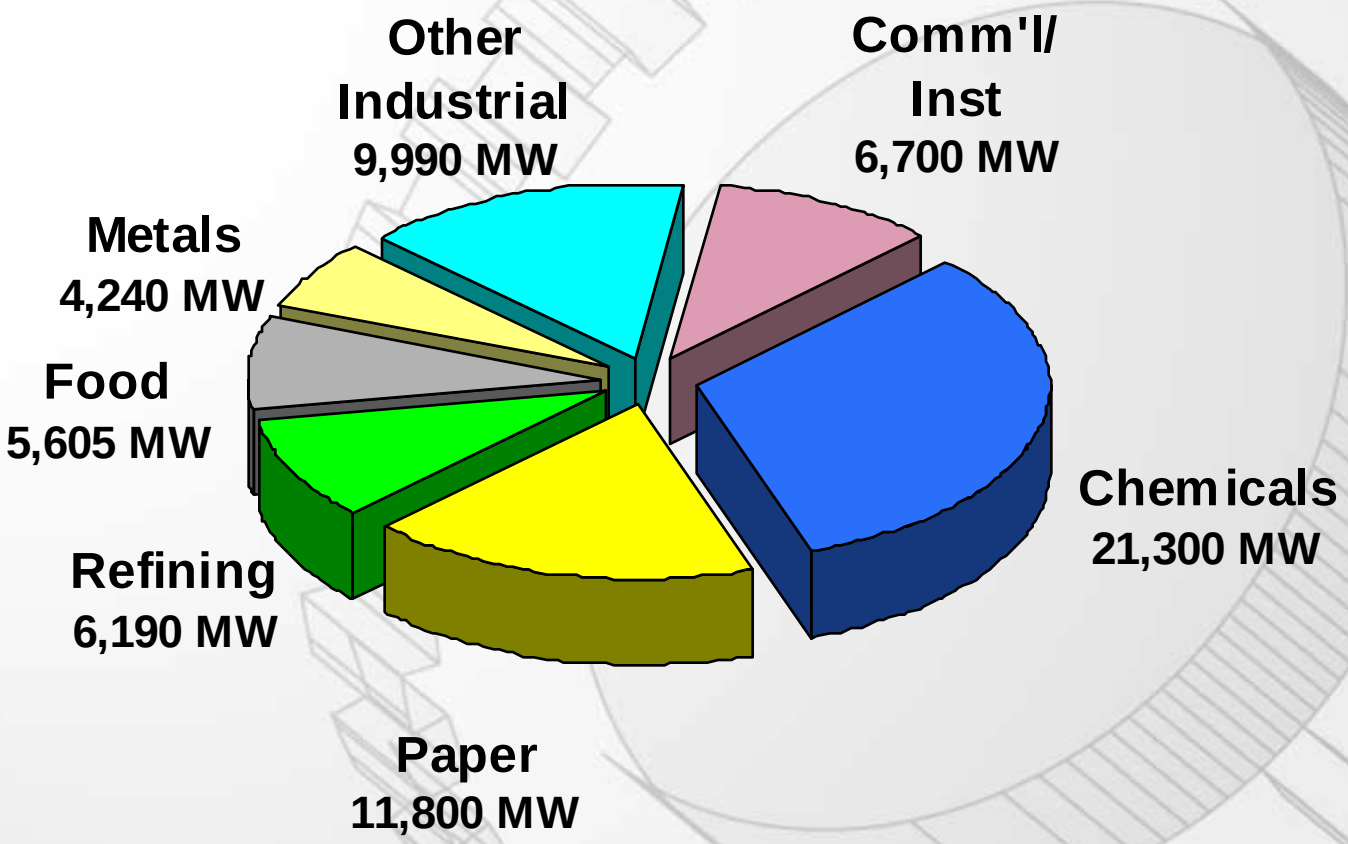
Existing CHP in the U.S.



Total Existing CHP in 2000: 65,900 MW
(2439 sites)

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Target Market Segments

- Ethanol production
- Dairy products and processing
- Hospitals and healthcare

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Ethanol Production (Dry Corn Milling)

- Electric and steam profiles are a good match with CHP
  - Typical CHP system 2 to 6 MW
  - 8760 hour operation
- Production capacity is expected to grow substantially
  - Shipments grew 30% 1997-2000
- Economically healthy in terms of margin and capital expenditures
  - Margins grew 56% 1997-2000
  - Capital investments grew 56% 1997-2000

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Ethanol Production (Dry Corn Milling)

- Limited number of plants, concentrated in the Midwest
  - Less than 75 existing plants
  - 50% in the Midwest
  - 35 plants in planning stages
- Energy costs are 11% of total material costs
- Very limited experience with CHP
  - Russell, KS
  - Lena, IL

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Dairy Products

- Electric to thermal ratios compatible with CHP technologies - 0.6 to 1.0
  - Significant steam and hot water loads for processing and sanitary wash
  - Electricity for processing and storage
- Healthy in terms of margin and capital expenditures (somewhat cyclical)
  - Average annual growth is 2.4%
  - Margin between cost and revenue is 23%
- Energy expenditures greater than $600 million annually

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Dairy Products

- Some experience with CHP – 340 MW at 16 sites
  - 10 recip engine
  - 4 gas turbine
  - 1 boiler/steam turbine
  - 1 fuel cell
- Overall penetration of CHP is low
  - 1,500 facilities nationwide
  - Strong presence in Midwest (45%) and Northeast (21%)

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Hospitals

- Significant and steady thermal and electric loads
  - Electric to thermal ratios compatible with CHP technologies - 0.8 to 1.0
  - 24 hour per day operation
- Moderate experience base with CHP – 538 MW at 136 sites
  - 83 recip engine systems
  - 35 gas turbine systems
  - 12 boiler/steam turbine systems
  - 6 fuel cells

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Hospitals

- Significant potential for additional CHP
  - 5,800 hospitals nationwide
  - 5,000 to 8,000 MW potential CHP capacity
  - Midwest 28%, Northeast 15%
- Experience with absorption cooling and steam plants
- Opportunity to partner with regional initiatives
  - City of Chicago, State of Illinois, Midwest CHP Application Center
  - Northeast CHP Initiative

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Marketing Approach

- Market CHP:
  - To selected sector as a whole
  - At the individual facility/company level
  - To other involved parties, such as state agencies and utility

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Marketing Approach: Selected Sector as a Whole

- Engage trade associations
  - Identify key trade associations for each sector
  - Work with associations to:
    - Identify key issues related to CHP that each sector faces
    - Leverage associations' contacts
    - Leverage their communication vehicles to publicize CHP and the CHP Partnership
      - Newsletters
      - Web sites
      - Journals
      - Conferences

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Marketing Approach: Selected Sector as a Whole

- Engage suppliers to the target industry
  - Identify key suppliers (e.g, equipment suppliers, engineers, designers)
  - Work with suppliers to:
    - Gauge their knowledge and perception of CHP
    - Introduce the EPA CHP Partnership
    - Identify their information needs
    - Facilitate contacts

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Marketing Approach: Selected Sector as a Whole

- Develop marketing materials for each sector
  - Fact sheet on CHP for each sector
    - Background on CHP
    - Benefits of CHP for target sector (e.g., financial, power reliability, environmental, public relations)
    - CHP potential and trends in target industry
  - Case study of a successful CHP application in the selected industry
    - Technology used
    - Electricity and heat supplied, and how it is used
    - Benefits to facility
    - Information on how project was developed
  - Presentations for trade association conferences

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Marketing Approach: Individual Facility/Company Level

- Develop preliminary company/facility list for each sector, based on market analysis
- Contact facilities/companies to
  - Gauge their interest in CHP
  - Verify if facility is a good candidate for a CHP project and site visit
  - Convey information about CHP Partnership
- Review the results of initial contacts with EPA and select facilities for site visits
- Schedule visits

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Marketing Approach: Individual Facility/Company Level

- Take marketing trips
- Trips might include meetings with:
  - Targeted facilities
  - Company executives to obtain corporate commitments to CHP at multiple sites
  - Utilities and regulatory agencies
  - Suppliers
- For industrial and hospital sectors, initial planning for two trips to Midwest is underway

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Marketing Approach: Individual Facility/Company Level

- Conduct post-meeting follow-up
  - Encourage next steps leading to CHP project development
  - Address facilities needs for technical and regulatory assistance

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Marketing Approach: Other Involved Parties (State Regulators, Utilities)

- Identify key market and regulatory issues in target areas that might favor or discourage CHP
  - Utility policies/practices
  - State regulations
- Work with state environmental agencies, PUCs, and utilities regulators in target areas to identify opportunities, address regulatory issues, etc.
- Our Partners
  - Key opportunities for project development

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DE CHP Market Sector Analysis

- Approach different from previously discussed method
- Leverages on assessments already done under Department of Energy Effort and builds upon it - no new market study
- EPA Goals
  - Find opportunities for EPA to assist in getting projects done

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CHP Market Selection Criteria

- Identify potential CHP candidates in district energy sector
  - Assess data from DOE census
  - Other resources
- Initial screening based on thermal and power requirements, age of existing equipment, electric costs, fuel availability and costs, and access to capital
- Qualitative factors such as “champion” and “greening issues” as well as local support/opposition

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CHP Project List Characterization

- College and university market projects
  - 6 Northeast and Midwest college/university projects selected in early or stalled stages
  - Total of 185 MW
  - Pressing need for additional capacity
  - Drivers included cost, reliability, “greening the campus” pressures
- Downtown market projects
  - 4 New York, California, and Washington downtown/utility projects selected in early or stalled stages
  - Total of 355 MW

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Marketing Strategies - Take Advantage of Scheduled Workshops and Conferences

- College/university
  - IDEA, APPA, Association of Land Grant Universities, New Jersey's Higher Education Partnership for Sustainability, "greening the campus" organizations, U.S. Green Building Council, DOE's Rebuild America program, etc
- Downtowns
  - Urban Consortium's Energy Task Force, Conference of Mayors, National League of Cities, National Association of Counties, local air quality boards, regulators, commissions, GSA, ELCON, DOE's Rebuild America program, etc.

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Marketing Strategies - Long Term

- Keep tabs on other 90+ projects identified
- Expand scope of projects and reach out to other district energy markets such as federal buildings, airports, industrial campuses, healthcare facilities, and other large-scale, campus-based District Energy markets
- Potential opportunity to leverage activities and funds within wastewater treatment industry
- Potential opportunity to facilitate a “motivated utility” project which wants to decentralize and find new uses for thermal energy

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CHP Partner Involvement

- Feedback on assessments
- Engage in marketing, follow up or feasibility studies

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